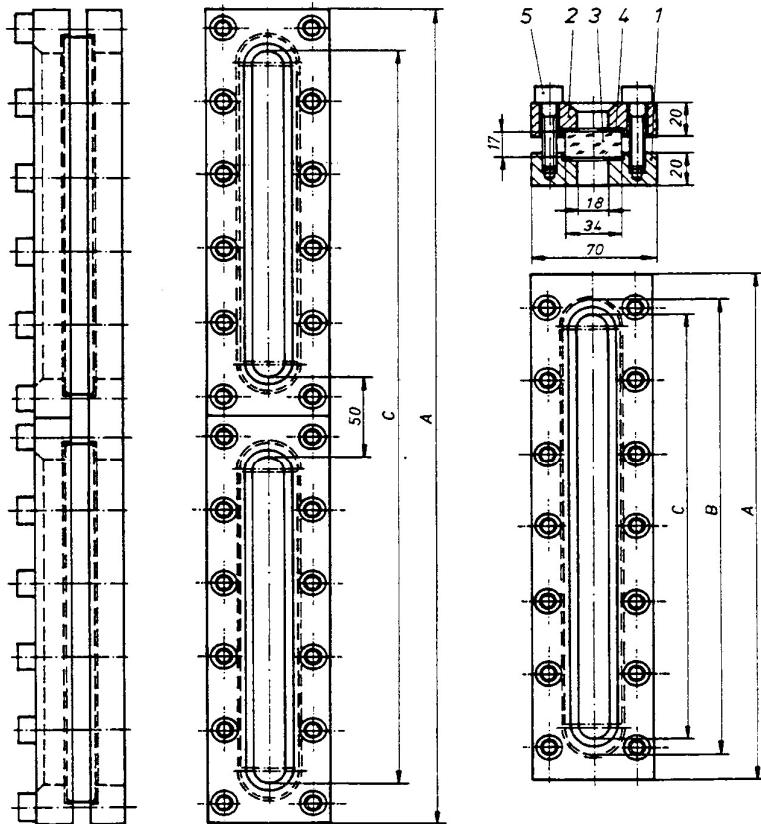


ANNEXURE-1

Rechteckige Schauglasarmatur zum Einschweißen oder Aufschweißen aus Werkstoff Stahl oder Edelstahl.
TÜV-vorgeprüft für Betriebsbedingungen 16 bar 300 °C. **Die TÜV-Vorprüfung gilt jedoch nicht für den Grundrahmen**, da dieser beim Einschweißen Bestandteil des Behälters wird.

Rectangular sight glasses for welding in or on. Available in mild steel or Stainless steel. **TÜV-preliminary examined** for Process conditions 16 bar 300 °C. **The TÜV-preliminary examination does not apply to the base frame**. The reason for this is that the base frame becomes part of the vessel after welding.



Maßtabelle: siehe Seite 3.120

Dimensions: see page 3.120

Sonderausführungen auf Wunsch lieferbar

Customized constructions upon request

Einzelteile Components	Werkstoff - Tabelle Index of Material					
	Ausführung Stahl Version steel		Ausführung Edelstahl / Stahl Version stainless steel / steel		Ausführung kompl. Edelstahl Version compl. Stainless steel	
Pos. 1	Stahl RSt 37-2	Steel	Edelst., 1.4571	Stainless steel	Edelst., 1.4571	Stainless steel
Pos. 2	Stahl RSt 37-2	Steel	Stahl RSt 37-2	Steel	Edelst., 1.4571	Stainless steel
Pos. 3	Borosilikatglas	<i>Borosilic.</i> glass	Borosilikatglas	<i>Borosilic.</i> glass	Borosilikatglas	<i>Borosilic.</i> glass
Pos. 4	SIL-C4400	<i>SIL-C4400</i>	SIL-C4400	<i>SIL-C4400</i>	SIL-C4400	<i>SIL-C4400</i>
Pos. 5	Stahl 8.8	Steel	Stahl 8.8	Steel	Edelst., A4	Stainless steel

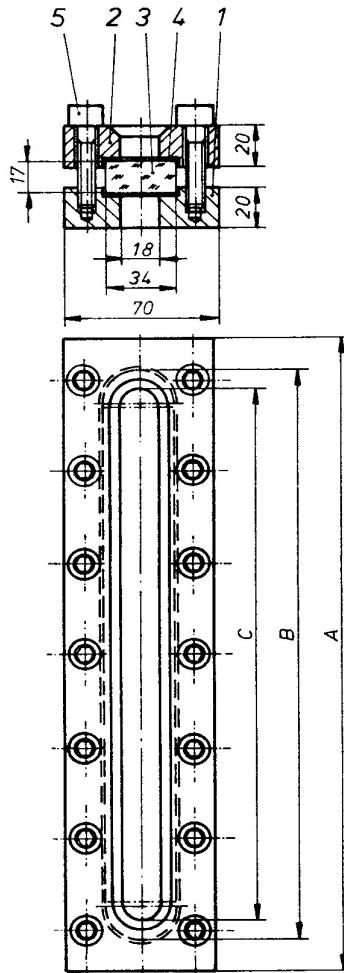
Maßtabelle - Schauglasarmatur zum Einschweißen oder Aufschweißen

Dimensions - Rectangular sight glasses for welding in or on

Ausführung Stahl

Version Steel

Bestell-Nr. Order-No.	Länge A Length	Sichtlänge C Length of window	Glaslänge B Length of glass	Glasqualität Glass quality	Gewicht kg Weight, kg
408/34-011	170	120	140	LM 55, DIN 7081	3,050
408/34-012	220	170	190	LM 55, DIN 7081	3,800
408/34-013	250	200	220	LM 55, DIN 7081	4,400
408/34-014	310	260	280	LM 55, DIN 7081	5,100
408/34-015	370	320	340	LM 55, DIN 7081	6,300
408/34-016	500	450	2 x 220	LM 55, DIN 7081	9,100
408/34-017	620	570	2 x 280	LM 55, DIN 7081	10,700
408/34-018	740	690	2 x 340	LM 55, DIN 7081	12,700
408/34-019	930	880	3 x 280	LM 55, DIN 7081	15,900



Ausführung Edelstahl-Stahl

Version Stainless steel - Steel

Bestell-Nr. Order-No.	Länge A Length	Sichtlänge C Length of window	Glaslänge B Length of glass	Glasqualität Glass quality	Gewicht kg Weight, kg
408/34-031	170	120	140	LM 55, DIN 7081	3,050
408/34-032	220	170	190	LM 55, DIN 7081	3,800
408/34-033	250	200	220	LM 55, DIN 7081	4,400
408/34-034	310	260	280	LM 55, DIN 7081	5,100
408/34-035	370	320	340	LM 55, DIN 7081	6,300
408/34-036	500	450	2 x 220	LM 55, DIN 7081	9,100
408/34-037	620	570	2 x 280	LM 55, DIN 7081	10,700
408/34-038	740	690	2 x 340	LM 55, DIN 7081	12,700
408/34-039	930	880	3 x 280	LM 55, DIN 7081	15,900

Ausführung komplett Edelstahl

Version cpl. Stainless steel

Bestell-Nr. Order-No.	Länge A Length	Sichtlänge C Length of window	Glaslänge B Length of glass	Glasqualität Glass quality	Gewicht kg Weight, kg
408/34-051	170	120	140	LM 55, DIN 7081	3,050
408/34-052	220	170	190	LM 55, DIN 7081	3,800
408/34-053	250	200	220	LM 55, DIN 7081	4,400
408/34-054	310	260	280	LM 55, DIN 7081	5,100
408/34-055	370	320	340	LM 55, DIN 7081	6,300
408/34-056	500	450	2 x 220	LM 55, DIN 7081	9,100
408/34-057	620	570	2 x 280	LM 55, DIN 7081	10,700
408/34-058	740	690	2 x 340	LM 55, DIN 7081	12,700
408/34-059	930	880	3 x 280	LM 55, DIN 7081	15,900

Index

1. Application
2. Functional Description
3. Installation and Commissioning
4. Maintenance and Cleaning
5. Ball or Taper Check
6. Repairs and Repair Instructions
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1. Application

Mohren fluid level indicators serve to measure and indicate the fluid level in tank and steam boiler installations. Basically, distinction is made between two indicator types:

a) Fluid level indicators with reflection glasses

b) Fluid level indicators with glass tube

Mohren fluid level indicators are made of materials selected to suit the specific application of the indicator, e.g. red brass RG 5, steel C 22.8 or Rst 37-2, stainless steel 1.4571.

2. Functional Description

a) Fluid level indicators with reflection glass

The reflection glass of the fluid level refracts the incident rays of light coming from one side in such a way that these rays are absorbed by the fluid zone to a varying degree depending upon the index of refraction of the fluid. As a result, the space filled by the fluid appears to be dark. In the gas or steam zone the light rays are totally reflected. Therefore, the space not filled with fluid remains bright. In order to obtain this effect the reflection glass on the side facing the fluid is provided with grooves.

The reflection glasses are made of borosilicate glass and, for safety reasons, should not be subjected to pressures above 35 bar at temperatures above 243°C (DIN 7081). If there are higher pressures or temperatures, however, a mica sheet is to be installed depending on the degree of excess temperature or pressure. This means that the mica sheet is placed on the glass side facing the fluid. The installation of a mica sheet is only possible in fluid indicators having transparent glasses.

The fluid indicator with reflection glass as well as the one with transparent glass is provided with the glass holder as a component part. The glass holder incorporates the fluid duct and the contact faces for the glass or glasses. Rows of bolts on either side of the fluid duct fix the cover in position. The cover serves the purpose of firmly clamping the glass and its sealing in place when the bolts are tightened.

b) Fluid level indicator with glass tube

The fluid level indicator with glass tube is made up of two cock or valve heads and one glass tube communicating with these two heads. The given fluid level can be read from the glass tube. Optionally, the glass tube can be provided with special guards.

General

The cocks or valves serve as shut-off devices of the fluid level indicator towards the vessel. For security reasons the ball check self closing device can be used in the cocks or valves. For description of its function see item 5. To empty the fluid level indicator there is a drain cock or valve mounted at the lower cock or valve.

3. Installation and Commissioning

a) Installation

Mohren fluid level indicators are manufactured according to customer's individual specifications. If, therefore, the distances between your connections (centre-to-centre distance of connecting flanges or connecting pipes) are commensurate with those of the fluid level indicator, the indicator can be installed. Be sure to avoid any tilting or mounting stresses of the fluid level indicator.

b) Commissioning of fluid level indicators

with glass tube

First mount the top and bottom cock or valve heads in place. To install the glass tube, remove the plug in the top head. Now introduce the glass tube through the top head up to its stop in the bottom head. See to it that retaining nuts, stuffing box and packing ring are correctly positioned. Now tighten the retaining nuts on both heads uniformly, taking care to ensure that the glass tube is in stress-free position. In order to make the fluid level of the tank or boiler visible turn the levers into horizontal, i.e. open position.

c) Commissioning of fluid level indicators

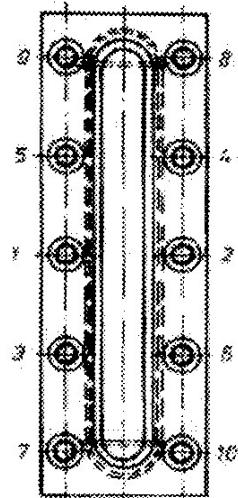
with reflection glass

First open the bottom one of the fluid level indicator valves which are still completely closed and then open the top one. When the fluid column in the level indicator is clearly found to have settled and stabilized, close the top and bottom valve again to prevent any fluid from escaping in case of glass breakage. To put the fluid level indicator into operation gradually open the bottom valve and the top valve.

After commissioning, recheck the cover bolts for tight fit. The sealings and pads of the glass take some time to settle so that retightening the cover bolts will become necessary. Start retightening with the centre bolts and proceed crosswise towards both ends. It is advisable to use a torque spanner and not to exceed a tightening torque of 20 Nm.

Check the bolts at least two to three times after putting the indicator into operation. We recommend the intervals of such inspection to be 24 hours.

In any case avoid excessive tightening torque. Fig. 2 shows the sequence of tightening or retightening the bolts. If there are more bolts than shown in Fig. 2, continue in the same order. Tighten the end bolts (in this example 7, 8, 9 and 10) somewhat less.



4. Maintenance and Cleaning

a) Fluid level indicator with glass tube

On fluid level indicators with stopcocks the stopcocks tend to be hard or even impossible to operate after they have not been used for a prolonged period of time. In order to avoid such seizing or sticking the stopcocks should be operated at regular intervals of time. It is recommended to open and close the stopcocks two to three times once or twice a week.

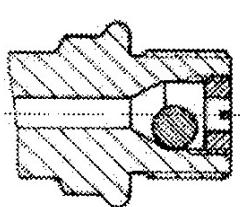
Cleaning of the fluid level indicator is effected by periodical blowing-through or flushing. To do so, close both stopcocks and open the drain cock. Removing the plug from the opening of the head makes it possible to clean from top or bottom. After blowing or flushing out, recommission the fluid level indicators as described under item 3 b).

b) Fluid level indicator with reflection glass

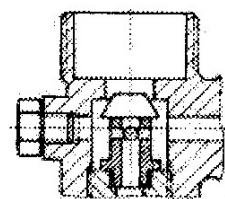
Cleaning of the fluid level indicator is effected by periodical blowing-through. To do so, close both valves and open the drain valve. Removing the plug from the opening of the top valve head makes it possible to clean from top or bottom. After blowing or flushing out, recommission the fluid level indicator as described under item 3 c).

5. Ball or taper check

1. Shows the ball check facility



2. Shows the ball check in the bottom cock head



The automatic ball or taper check facility is a safety feature in the cock or valve heads of Mohren fluid level indicators.

It serves the purpose of automatically preventing the discharge of vapours, gases and fluids from the indicator in the event of glass breakage with fully opened cock or valve heads.

Operation of the automatic ball or taper check facility is made sure the following way:

A stainless steel ball or taper is installed beneath the valve seat. At the very moment of leakage (glass breakage) the sudden flow will take along the ball or taper forcing it out of its place onto the valve face. This prevents any further discharge of fluid as the ball or taper is firmly pressed against the valve face by the fluid pressure. The cock or valve heads can now be closed.

When the cock or valve heads have been closed the glass can be replaced as necessary.

Note:

The ball or taper check facility is only effective if the cock or valve heads are fully open and at an operating pressure of at least 3 bar.

6. Repairs and Repair Instructions

Mohren fluid level indicators should be included in your routine maintenance procedures. This includes in particular the inspection of the glasses. Several liquids (such as fully demineralized water) attack the glasses quite rapidly which is why the condition of the glasses is to be checked regularly.

Fluid level indicators with mica sheet must also be inspected regularly. Mica is a natural product and therefore subject to natural wear and tear cannot be avoided. This wear can be minimized, however, by taking due care in operation and repair of the fluid indicators.

Glass and mica replacement should only be carried out by persons specially trained and skilled in this operation because careful and clean working is a necessity.

Replacement of damaged glasses should be done as follows: Remove the cover frame together with the damaged glass and slack parts of the gasket. Then clean the glass bearing-surface area of the base and cover frame. Take care that they are not damaged. Put the gaskets into the base and cover frame. Before inserting them lubricate the gaskets with a graphite/oil mixture. Then insert the glass and take care that it does not touch the metal parts. Then put the cover frame with gasket on the glass and assemble the screws or nuts slightly by hand. The assembly of screws or nuts is done according to item 2 assembly and starting-up, picture 2.

7. Ordering Specification

Please specify the following information on your order:

1. Type of fluid level indicator (see catalogue)
2. Centre-to-Centre distance (connecting piece distance), indicator length
3. Operating conditions (pressure and temperature)
4. Connecting flange dimensions with flange standard specification
5. Left or right-hand design

